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First Named Inventor	Cracauer et al.
Art Unit	1743
Examiner Name	D.K. Handy
Attorney Docket Number	FORS-06679

ENCLOSURES (Check all that apply)

- [✓] Fee Transmittal Form
  - [ ] Fee Attached
- [ ] Amendment/Reply
  - [ ] After Final
  - [ ] Affidavits/declaration(s)
- [ ] Extension of Time Request
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- [ ] After Allowance Communication to TC
- [✓] Appeal Communication to Board of Appeals and Interferences
- [ ] Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
- [ ] Proprietary Information
- [ ] Status Letter
- [ ] Other Enclosure(s) (please Identify below):

Remarks

In response to the Notice of Non-Compliant Brief mailed 12/26/06, Applicants herewith file a Summary of the Claimed Subject Matter Requried by 37 CFR 41.37(c)(1)(v). The Commissioner is hereby authorized to charge any deficiency in the payment of the required fee(s), and/or credit any overpayment, to Deposit Account No. 08-1290.

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	MEDLEN & CARROLL, LLP		
Signature	Tyler J. Sisk		
Printed name	Tyler J. Sisk		
Date	January 25, 2007	Reg. No.	59,850

CERTIFICATE OF TRANSMISSION/MAILING

I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below:

Signature	Mary Ellen Wake		
Typed or printed name	Mary Ellen Wake	Date	January 25, 2007

PATENT
Attorney Docket No. **FORS-06679**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of:	Raymond F. Cracauer		
Serial No.:	10/054,023	Group No.:	1743
Filed:	11/13/2001	Examiner:	D.K. Handy
Entitled:	**Nucleic Acid Synthesizers**		

RESPONSE TO NON-COMPLIANT APPEAL BRIEF:

SUMMARY OF THE CLAIMED SUBJECT MATTER REQUIRED BY 37 CFR 41.37(c)(1)(v)

APPEAL NO.:

CERTIFICATE OF FACSIMILE TRANSMISSION UNDER 37 C.F.R. § 1.8(a)(1)(i)(B)

I hereby certify that this correspondence (along with any referred to as being attached or enclosed) is, on the date shown below, being deposited with the U.S. Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop Appeal Brief – Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

1-25-07

By: Mary Ellen Waite

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Madam/Sir:

This paper is submitted in answer to the Notification of Non-Compliant Appeal Brief mailed December 26, 2006, which set a one month or thirty days (whichever is longer) period for response, and provides a summary of the claimed subject matter as required by 37 CFR 41.37(c)(1)(v). Thus, this paper is considered timely filed on or before January 26, 2007. According to MPEP 1205.03 (B), Appellants respectfully submit this paper and request this submission be used to replace section **V. SUMMARY OF CLAIMED SUBJECT MATTER**, found on pages 3-5 of Appellant's originally filed Appeal Brief.

Please replace the SUMMARY OF CLAIMED SUBJECT MATTER beginning on page 3 with the following:

V. SUMMARY OF CLAIMED SUBJECT MATTER

The present invention relates to nucleic acid synthesizers and methods of using and modifying nucleic acid synthesizers. For example, the present invention provides highly efficient, reliable, and safe synthesizers that find use, for example, in high throughput and automated nucleic acid synthesis, as well as methods of modifying pre-existing synthesizers to improve efficiency, reliability, and safety. The present invention also relates to synthesizer arrays for efficient, safe, and automated processes for the production of large quantities of oligonucleotides.

With the completion of the Human Genome Project and the increasing volume of genetic sequence information available, genomics research and subsequent drug design efforts have been increasing as well. Many diagnostic assays and therapeutic methods utilize oligonucleotides. The information obtained from genomic analysis provides valuable insight into the causes and mechanisms of a large variety of diseases and conditions, while oligonucleotides can be used to alter gene expression in cells and tissues to prevent or attenuate diseases or alter physiology. As more nucleic acid sequences continue to be identified, the need for larger quantities of oligonucleotides used in assays and therapeutic methods increases.

To meet the increasing demand for nucleic acid synthesis, there has been an increase in the variety of designs, and the volume of production of nucleic acid synthesizers. Unfortunately, the currently available synthesizers are not designed to adequately meet the needs of the industry. Exemplary nucleic acid synthesizers include the synthesizers described in U.S. Patent Publication No. 2001/0001035 A1, published on May 10, 2001. Yet, this type of synthesizer has a significant number of drawbacks. In particular, this and other available synthesizers are limited in their ability to efficiently synthesize large numbers of oligonucleotides. While synthesizers have been developed to simultaneously synthesize more than one oligonucleotide at a time, such machines are not efficient at the production of different types of nucleic acids simultaneously (e.g., different lengths of nucleic acids) and are unacceptably prone to performance failures and

environmental contamination. Furthermore, available synthesizers are not suitably configured for use in large-scale nucleic acid production facilities or for automated nucleic acid synthesis.

The present invention stands in stark contrast to currently available and previously used nucleic acid synthesis systems. Specifically, the present invention provides nucleic acid synthesizers that are safe, efficient, flexible, and that are amenable to large-scale production and automation.

In one embodiment of the present invention, an oligonucleotide synthesizer is described[1] comprising a reaction chamber[2] and a lid enclosure[3], the lid enclosure containing a ventilation system[4], wherein in an open position[5], the lid enclosure provides a substantially ventilated workspace[6] via the ventilation system in the lid enclosure, wherein in the open position the ventilated workspace is of sufficient size to permit an operator's hands to enter the reaction chamber **(for example, as recited in independent Claim 1)**.

In another embodiment of the present invention, a ventilated nucleic acid synthesizer system[7] is described, comprising a ventilation tube[8], a lid enclosure[9] on a nucleic acid synthesizer comprising a top cover[10] with a ventilation slot[11], and a top enclosure[12] comprising a

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[1] For example, in the Specification at page 28, line 28 through page 56, line 24; and page 89 line 14 through page 97, line 11, and Figure 1, 1.

[2] Described, for example, in the Specification at page 24 line 5 through page 28 line 11; page 49, lines 26-29; and page 51, lines 15-20.

[3] Described, for example, in the Specification at page 13, lines 12-20 and 26-31; page 27, lines 20-26; page 50, lines 14-21 and 26-31; page 51, lines 1-7, 11-14, 18-20, and 21-31; page 52, lines 1-16; page 54, lines 27-31; and page 96, lines 6-14, and Figure 21A, 102.

[4] Described, for example, in the Specification at page 5, lines 28-30; page 22, lines 2-6; page 48, lines 25-30; page 49, lines 19-30; page 50, lines 1-2; page 53, line 7 through page 56, line 24; and page 25, lines 16-26, and Figures 19-21, 103 and 105.

[5] Described, for example, in the Specification at page 19, lines 8-18 and 21-31; page 20, lines 1-12; page 49, lines 26-30; page 50, lines 1-2; and page 56, lines 5-24, and Figures 21A and 21B.

[6] Described, for example, in the Specification at page 28, lines 3-11; page 49, lines 28-30; page 50, lines 1-2; page 53 line 7 through page 55, line 24; page 96, lines 30-31; and page 97, lines 1-11, and Figure 20A.

[7] Described, for example, in the Specification at page 28, line 28 through page 56, line 24; and page 89 line 14 through page 97, line 11.

[8] Described, for example, in the Specification at page 47, lines 30-31; page 48, lines 2-12; page 50, lines 18-25; page 52, line 25 through page 53, line 6; page 55, lines 11-29; page 91, line 30 through page 92, line 10; and page 95, lines 7-15, and Figures 19-21, 103.

[9] Described, for example, in the Specification at page 27, lines 20-26; page 50, lines 14-21; page 50, line 26 through page 52, line 23; and page 96, lines 6-22, and Figure 21A, 102.

[10] Described, for example, in the Specification at page 27, lines 12-26; page 34, lines 10-18; page 39, lines 23-26; page 50, lines 3-21; page 51, lines 25-30; page 52, lines 10-23; and page 54, lines 17-26, and Figure 21A, 30.

[11] Described, for example, in the Specification at page 51, lines 15-25; page 55, lines 13-23 and 30-31; page 56, lines 1-4; and page 96, lines 11-16, and Figure 19C, 100.

[12] Described, for example, in the Specification at page 27, lines 12-26; page 50, lines 3-21; and page 51, lines 15-20.

top plate[13] with a ventilation opening[14], wherein the top enclosure is attached to the top cover to form a substantially enclosed space[15] over the top cover, and a vacuum source[16] connected to the ventilation tube **(for example, as recited in independent Claim 20)**.

In an additional embodiment of the present invention, a method for decreasing the quantity of vapor emissions released into the surrounding atmosphere created during the use of an oligonucleotide synthesizer is described, the method comprising providing an oligonucleotide synthesizer[17], connecting the oligonucleotide synthesizer to a ventilation system[18] connected to a source of negative pressure or vacuum[19], and operating the source of negative pressure or vacuum **(for example, as recited in independent Claim 25)**.

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[13] Described, for example, in the Specification at page 34, lines 27-30; page 35, lines 1-6; and page 89, lines 22-25.
[14] Described, for example, in the Specification at page 50, lines 3-9, 18-23, and 26-31; page 51, lines 1-14; page 52, lines 3-9; and page 96; lines 20-29.
[15] Described, for example, in the Specification at page 27, lines 12-19 and 27-31; page 28, lines 1-1; page 50, lines 3-13; page 51, lines 8-20; page 55, lines 13-23; and page 94, lines 17-20.
[16] Described, for example, in the Specification at page 38, lines 10-12 and 30-31; and page 39, lines 1-6 and 23-26.
[17] Described, for example, in the Specification at page 28, line 28 through page 56, line 24; and page 89 line 14 through page 97, line 11.
[18] Described, for example, in the Specification at page 5, lines 28-30; page 22, lines 2-6; page 48, lines 25-30; page 49, lines 19-30; page 50, lines 1-2; page 53, line 7 through page 56, line 24; and page 25, lines 16-26.
[19] Described, for example, in the Specification at page 38, lines 10-12 and 30-31; page 39, lines 1-6 and 23-26; page 52, lines 26-31; page 53, lines 11-15; page 96, lines 30-31; and page 97, lines 1-4.

CONCLUSION

Appellants respectfully submit that independent claims 1, 20 and 25 are identified along with page and line number support in the **SUMMARY OF CLAIMED SUBJECT MATTER** submitted herewith. Appellants respectfully request entry of the **SUMMARY OF CLAIMED SUBJECT MATTER**.

Dated: 1/25/07

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